

Notice of Allowability

Application No.

09/872,332

Examiner

Joseph E. Avellino

Applicant(s)

BERG, MITCHELL T.

Art Unit

2143

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE dated 1/18/07.
2. ☒ The allowed claim(s) is/are 6-10, 16-26, 29-68, 70, 72, 74 (renumbered 1-59).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 1/18/07
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date herewith
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DAVID WILEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Tim Boller on March 6, 2007.

The application has been amended as follows:

6. (Currently Amended) An information processing system, comprising:
a first computing device configured to:
receive a request packet originating from a client, the request packet including an identifier;
in response to the request packet, identify a computing device that is associated with the identifier;
when the identified computing device is the first computing device, perform an operation of a first application in response to the request packet; and
when the identified computing device is a second computing device, output a second packet addressed to a forward thread address of the second computing device for performing the operation of the first application in response to the second packet, the second packet including a reference to ~~a data structure of a connection with the client and an indication~~ a field that is set to indicate the second packet is a forwarded packet, the reference ~~to the data structure and the indication field~~ being included within a single header of the second packet.
7. (Previously Presented) The system of claim 6 wherein the identifier is a session identifier.
8. (Previously Presented) The system of claim 7 wherein the session identifier is an HTTP session identifier.

9. (Previously Presented) The system of claim 6 wherein the identifier is a URI identifier.

10. (Previously Presented) The system of claim 6 wherein the identifier is an SSL identifier.

11.-15. (Canceled).

16. (Currently Amended) A method performed by a first computing device of an information processing system, the method comprising:

receiving a request packet originating from a client, the request packet including an identifier;

in response to the request packet, identifying a computing device that is associated with the identifier;

when the identified computing device is the first computing device, performing an operation of a first application in response to the request packet; and

when the identified computing device is a second computing device, outputting a second packet addressed to a forward thread address of the second computing device for performing the operation of the first application in response to the second packet, the second packet including a reference to ~~a data structure of a connection with the client and an indication a field that is set to indicate the second packet is a forwarded packet, the reference to the data structure and the indication field~~ being included within a single header of the second packet.

17. (Previously Presented) The method of claim 16 wherein the identifier is a session identifier.

18. (Previously Presented) The method of claim 17 wherein the session identifier is an HTTP session identifier.

19. (Previously Presented) The method of claim 16 wherein the identifier is a URL identifier.

20. (Previously Presented) The method of claim 16 wherein the identifier is an SSL identifier.

21. (Currently Amended) A computer-readable storage medium containing instructions that cause a first computing device of an information processing system to perform a method comprising:

receiving a request packet originating from a client, the request packet including an identifier;

in response to the request packet, identifying a computing device that is associated with the identifier;

when the identified computing device is the first computing device, performing an operation of an application in response to the request packet; and

when the identified computing device is a second computing device, outputting a second packet addressed to a forward thread address of the second computing device for performing the operation in response to the second packet, the second packet containing a reference to ~~a data structure of a connection with the client and an indication~~ a field that is set to indicate the second packet is a forwarded packet, ~~the reference to the data structure and the indication field~~ being included within a single header of the second packet.

22. (Previously Presented) The computer-readable storage medium of claim 21 wherein the identifier is a session identifier.

23. (Previously Presented) The computer-readable storage medium of claim 22 wherein the session identifier is an HTTP session identifier.

24. (Previously Presented) The computer-readable storage medium of claim 21 wherein the identifier is a URL identifier.

25. (Previously Presented) The computer-readable storage medium of claim 21 wherein the identifier is an SSI identifier.

26. (Previously Presented) The computer-readable storage medium of claim 21 wherein the computer-readable storage medium is a memory of a computing device.

27.-28. (Canceled).

29. (Currently Amended) The system of claim 6 wherein the first computing device is configured to identify the computing device associated with the identifier by determining whether the computing device stores the a data structure of the connection with the client.

30. (Previously Presented) The system of claim 6 wherein the second packet includes the request packet.

31. (Currently Amended) The system of claim 6 wherein the ~~reference to the data structure~~ includes an IP address of the client, a port of a second application executed by the client, an IP address of the second computing device, and a port of the first application executed by the second computing device.

32. (Previously Presented) The system of claim 31 wherein the port of the application executed by the second computing device is a TCP port.

33. (Previously Presented) The system of claim 31 wherein the port of the application executed by the second computing device is a UDP port.

34. (Previously Presented) The system of claim 6 wherein the first computing device is configured to receive the request packet through a global computer network.

35. (Previously Presented) The system of claim 34 wherein the first computing device is configured to:

when the identified computing device is the second computing device, output the second information packet to the second computing device through a local area network.

36. (Previously Presented) The system of claim 6 wherein the first application is a socket-based application.

37. (Previously Presented) The system of claim 6 wherein the first computing device comprises a network interface card.

38. (Previously Presented) The system of claim 6 wherein the first and second computing devices are servers in a server farm.

39. (Currently Amended) The method of claim 16 wherein identifying the computing device associated with the identifier comprising determining whether the computing device stores the a data structure of the connection with the client.

40. (Previously Presented) The method of claim 16 wherein the second packet includes the request packet.

41. (Currently Amended) The method of claim 16 wherein the reference to ~~the data structure~~ includes an IP address of the client, a port of a second application executed by the client, an IP address of the second computing device, and a port of the first application executed by the second computing device.

42. (Previously Presented) The method of claim 41 wherein the port of the application executed by the second computing device is a TCP port.
43. (Previously Presented) The method of claim 41 wherein the port of the application executed by the second computing device is a UDP port.
44. (Previously Presented) The method of claim 16 wherein the method comprises receiving the request packet through a global computer network.
45. (Previously Presented) The method of claim 44 wherein the method comprises:
when the identified computing device is the second computing device, outputting the second information packet to the second computing device through a local area network.
46. (Previously Presented) The method of claim 16 wherein the first application is a socket-based application.
47. (Previously Presented) The method of claim 16 wherein the first computing device comprises a network interface card.
48. (Previously Presented) The method of claim 16 wherein the first computing device is a first destination server in a server farm and the second computing device is a second destination server in the server farm.
49. (Previously Presented) The method of claim 48 wherein the method comprises:
receiving the request packet from the client through a first network;

Art Unit: 2143

when the identified device is the first server, performing the operation of the first application in response to the first information packet comprises executing, by the first server, a server application associated with the received packet; and

when the identified computing device is the second server, outputting the second information packet to the second computing device comprises:

generating the second packet; and

forwarding the second packet to the second server through a second network.

50. (Currently Amended) An information processing system, comprising:
a first computing device comprising:

means for receiving a first information packet originating from a client;

means for responding to the first information packet by identifying a computing device that ~~stores a data structure of~~ has a connection with the client;

means for selectively performing an operation of a server application configured to perform the operation when the identified computing device is the first computing device; and

means for selectively outputting a second information packet to a second computing device configured to output the second information packet addressed to a forward thread address of the second computing device when the identified computing device is the second computing device, wherein the second computing device is configured to perform the operation in response to the second information packet, the second information packet including a reference to the ~~data structure connection~~ and ~~an indication a field that is set to indicate the~~ second packet is a forwarded packet, the reference and the ~~indication field~~ being included within a single header of the second information packet.

51. (Previously Presented) The system of claim 50 wherein the second information packet includes the first information packet.

52. (Previously Presented) The system of claim 50 wherein the reference includes an IP address of the client, a port of a second application executed by the client, an IP address of the second computing device, and a port of the first application executed by the second computing device.

53. (Previously Presented) The system of claim 52 wherein the port of the first application is a TCP port.

54. (Previously Presented) The system of claim 50 wherein the means for receiving is configured to receive the first information packet through a global computer network.

55. (Previously Presented) The system of claim 50 wherein the means for selectively outputting is configured to:

when the identified computing device is a second computing device, output the second information packet to the second computing device through a local area network.

56. (Previously Presented) The system of claim 50 wherein the server application is a socket-based application.

57. (Previously Presented) The system of claim 50 wherein the first computing device comprises a network interface card.

58. (Previously Presented) The system of claim 50 wherein the first information packet is addressed by the client to the first computing device, and wherein the means for receiving is configured to receive the first information packet in response to the addressing.

Art Unit: 2143

59. (Previously Presented) The system of claim 50 wherein the first computing device and the second computing device are servers in a server farm.

60. (Currently Amended) A computer-readable storage medium containing instructions to cause a first computing device to process information, by performing a method comprising:

receiving a first information packet originating from a client;

in response to the first information packet, identifying a computing device that ~~stores a data structure of~~ has a connection with the client;

when the identified computing device is the first computing device, performing an operation of a server application in response to the first information packet; and

when the identified computing device is a second computing device, outputting a second information packet addressed to a forward thread address of the second computing device, wherein the second computing device is configured to perform the operation in response to the second information packet, the second information packet including a reference to the data ~~structure connection~~ and ~~an indication a field that is set to indicate the second packet is a~~ forwarded packet, the reference and the ~~indication field~~ being included within a single header of the second information packet.

61. (Previously Presented) The computer-readable storage medium of claim 60 wherein the second information packet includes the first information packet.

62. (Previously Presented) The computer-readable storage medium of claim 60 wherein the reference includes an IP address of the client, a port of a second application executed by the client, an IP address of the second computing device, and a port of the first application executed by the second computing device.

63. (Previously Presented) The computer-readable storage medium of claim 62 wherein the port of the first application is a TCP port.

Art Unit: 2143

64. (Previously Presented) The computer-readable storage medium of claim 60 wherein the computer-readable medium is a memory of a computer device.

65. (Previously Presented) The computer-readable storage medium of claim 60 wherein the first information packet is received through a global computer network.

66. (Previously Presented) The computer-readable storage medium of claim 60 wherein the application is a socket-based application.

67. (Previously Presented) The computer-readable storage medium of claim 60 wherein the first computing device comprises a network interface card.

68. (Currently Amended) The system of claim 6 wherein the single header field comprises a packet type field and ~~the indication comprises a setting of the packet type field.~~ is set to indicate the second packet is associated with an existing connection.

69. (Canceled).

70. (Currently Amended) The method of claim 16 wherein the single header field comprises a packet type field and ~~the indication comprises a setting of the packet type field.~~ is set to indicate the second packet is associated with an existing connection.

71. (Canceled).

72. (Currently Amended) The computer-readable storage medium of claim 21 wherein the ~~indication field~~ comprises ~~a setting of a packet type field.~~ field and is set to indicate the second packet is associated with an existing connection.

73. (Canceled).

Art Unit: 2143

74. (Currently Amended) The system of claim 50 wherein the indication field comprises a setting of a packet type field, field and is set to indicate the second packet is associated with an existing connection.

75. (Canceled).

Please replace the Abstract with the following:

According to a first embodiment, a first computing device receives a request packet originating from a client. In response to at least the request packet and a state of at least one of the first computing device and a second computing device, the first computing device selects a computing device for maintaining a session with the client. If the selected computing device is the first computing device, the first computing device outputs a response packet to the client for identifying the first computing device as maintaining the session with the client. If the selected computing device is a second computing device, the first computing device outputs a response packet to the client for identifying the second computing device as maintaining the session with the client. According to a second embodiment, a first computing device receives a request packet originating from a client. The request packet includes an identifier. In response to the request packet, the first computing device identifies a computing device that is associated with the identifier. If the identified computing device is the first computing device, the first computing device performs an operation of an application in response to the request packet. If the identified computing device is a second computing device, the first computing device outputs the request packet to the second computing device for performing the operation in response to the request packet.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: The prior art does not provide for, nor suggests providing for an information processing system which is capable of forwarding a second packet from a first computing device to a second computing device, the second packet including a reference to a data structure and setting of a packet type field that the packet is a forwarded packet which is included within a single header of the second packet. The packet is also addressed to the forward-thread IP address of the second device. A forward table stores information representative of connection endpoints that have been migrated to a different server. The forward thread receives a packet from the port, verifies the packet's header, and determines the encapsulation header's type field is set to 0x01, and if so, the packet is part of a new connection, which then sets up the endpoint connection. If the packet type field is set to 0x02, then the packet is part of an existing connection, and the forward thread uses the IP address and TCP ports in the forward-connect table. If the type field is 0x03, then the packet is a verification that a connection was successfully migrated to another server, then the iNIC moves the record from the temporary table to the forward table, deletes the record in the temporary table, and drops the packet. For these reasons, in conjunction with the other limitations of the independent claims, puts this case in condition for allowance.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

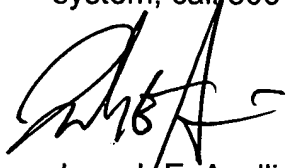
Art Unit: 2143

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph E. Avellino whose telephone number is (571) 272-3905. The examiner can normally be reached on Monday-Friday 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Joseph E. Avellino, Examiner
March 7, 2007



DAVID WILEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100